

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION.

Improvements in and connected with Means for Increasing the Carrying Capacity of Motor Road Vehicles.

I, ROBERT NOYES FAIRBANKS, of No. 115, Fulham Road, London, S.W. 3, a Citizen of the United States of America, do hereby declare the nature of this invention to be as follows:—

This invention comprises improvements in and connected with conversion attachments for motor road vehicles and has for its object to enable the carrying capacity of vehicles of appropriate construction to be increased in a simple, reliable and economical manner. In some constructions of motor road vehicles, the point of support of the chassis frame is considerably forward of the rear axle and the problem is to fit a chassis extension projecting rearwardly far over the axle whilst avoiding dangerous sway when steering the vehicle in a loaded condition. In the new Ford 30 cwt. chassis, for example, the rear part of the chassis is supported by cantilever springs which are attached to the chassis by suspension shackles at their forward ends and at their middle points by pivot bolts, their rear ends being rearwardly extended to the rear axle and engaged with collars free to revolve on the rear axle. In such a vehicle the rear axle is adapted for carrying a heavier load than the cantilever springs and, for this reason, is well adapted for having its carrying capacity increased, provided the said problem is dealt with satisfactorily. According to this invention, the chassis is fitted with a rearward extension which projects as far out beyond the rear axle as desired, and this extension is supported by auxiliary springs appropriately attached thereto and having a sliding bearing upon bearing plates fitted to the rear axle. These springs are advantageously of the quarter elliptic type, the roots of such springs being attached to the extension preferably by the aid of wedge devices driven in between the

flanges of the tapered chassis longitudinal and the flanges of the side members of the extension.

According to one suitable construction, the extension comprises side channel section members which are rivetted to the side members of the chassis and a cross angle member fastened to the upper flanges of the side members to give rigidity and cross support. The top flanges of the side members of the extensions lie along the top flanges of the side members of the chassis but as the bottom flanges of the chassis side members incline upwardly towards the rear end due to the tapered formation of such members, an acute angular space is enclosed between the bottom flanges of the chassis and extension side members. A wedge plate, having a clamp plate stoutly attached thereto, is driven into the said angular space at each side of the chassis the said wedge plate having longitudinally slotted ends for enabling it to be bolted to the lower flange of the appropriate extension side member when driven into a tightly wedged position between the bottom flanges enclosing the said angle. The root or thick end of a quarter elliptic spring is clamped to the clamp plate of each wedge plate and the flexing ends of such springs extend forwardly to the rear axle and have a sliding bearing on bearing plates appropriately fixed on the rear axle. The adjustable wedge plates give a very firm connection between the extension side members and the side members of the chassis and they also provide a very stable attachment for the auxiliary springs. Various modifications of this construction are possible without departing from the invention.

Dated this 4th day of October, 1928.

JENSEN & SON,

77, Chancery Lane, London, W.C. 2,
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COMPLETE SPECIFICATION.

Improvements in and connected with Means for Increasing the Carrying Capacity of Motor Road Vehicles.

I, ROBERT NOYES FAIRBANKS, of No. 115, Fulham Road, London, S.W. 3, a Citizen of the United States of America, do hereby declare the nature of this invention to be as follows:—
[Price 1/-]

tion and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention comprises improvements in and connected with conversion attachments for motor road vehicles and has for its object to enable the carrying capacity of vehicles of appropriate construction to be increased in a simple, reliable and economical manner. In some constructions of motor road vehicles, the point of support of the chassis frame is considerably forward of the rear axle and the problem is to fit a chassis extension
10 projecting rearwardly far over the axle whilst avoiding dangerous sway when steering the vehicle in a loaded condition. In the new Ford 30 cwt. chassis, for example, the rear part of the chassis is supported by cantilever springs which are attached to the chassis by suspension shackles at their forward ends and at their middle points by pivot bolts, their
15 rear ends being rearwardly extended to the rear axle and engaged with collars free to revolve on the rear axle. In such a vehicle the rear axle is adapted for carrying a heavier load than the cantilever springs and, for this reason, is well adapted for having its carrying capacity increased, provided the said problem is dealt with satisfactorily.

According to this invention, the chassis is fitted with a rearward extension which projects as far out beyond the rear axle as desired, and this extension is supported by auxiliary springs appropriately attached thereto and having support upon bearings or bearing surfaces fitted to the rear axle. These springs are advantageously of the quarter elliptic type, the roots of such springs being attached to the extension preferably by the aid of wedge devices driven in between the
45 flanges of the tapered chassis longitudinals and the flanges of the side members of the extension.

In order to enable the invention to be readily understood reference is made to the accompanying drawing illustrating practical examples of construction for carrying the invention into effect, in which drawing:—

55 Figure 1 is a perspective view of one side of a portion of a vehicle having an extension attached thereto in accordance with these improvements.

Figure 2 is a perspective view of a detail shown in Figure 1 in an inverted position.

Figure 3 is a perspective view to illustrate the construction of the extension spring seating and

Figure 4 is a perspective view of a modified construction for effecting the attachment of the extension.

Referring to the example of construction shown in Figure 1, the extension comprises side channel section members *a* which are bolted or rivetted at *b* to the side members *c* of the chassis, and one or more cross angle members *d* fastened to the upper flanges *a*¹ of the side members *a*, to give rigidity and cross support. The top flanges *a*¹ of the side members *a* of the extension lie along the top flanges *c*¹ of the side members *c* of the chassis, but as the bottom flanges *c*² of the chassis side members *c* incline upwardly towards the rear end, as shown, due to the tapered formation of such members, an acute angular space *e* is enclosed between the bottom flanges *c*² of the chassis members *c* and the bottom flanges *a*² of the extension side members *a*. A wedge block *f* is driven into the said angular space *e* at each side of the chassis so as to give a very firm connection or support between the extension and the chassis. The wedge blocks *f* are formed with vertical slots *f*¹ at their thick ends for the passage of large bolts *g* which prevent longitudinal movement of the blocks when adjusted in a tightly wedged position. Each bolt *g* fitted at its upper end with a head or nut *g*¹, passes through a flange *c*² of the chassis through the slot in the wedge and through the root or thick end *h*¹ of a quarter elliptic spring *h* which is clamped at this end between clamp plates *i*¹. A nut *g*² at the lower end of the bolt *g* may be tightened against the lower clamp plate *i*¹ or against the lower lamination of the spring *h*, this depending on the form or size of the plate. The clamp plates *i*¹ may be formed with lateral ears or lugs *j* which are perforated for the reception of the ends of U-bolts *k* which pass over the side members of the extension and chassis, nuts *k*¹ on these bolts being tightened against the lower clamp plates *i*¹. The flexing ends *h*² of the springs *h* extend forwardly to the rear axle *l* and have a sliding bearing on or in bearing plates, boxes or seatings such as *m*. The latter may be provided by forming channels in collars, blocks or other convenient means, fitted to or clamped around the rear axle *l*. In the drawing, see also Figure 3, a block *n* is used having a part-circular seat part *n*¹ to fit or rest on the axle *l* and a lug *n*² which is fastened to one of the radius rod lugs *n*³ on the flange *n*⁴ of the axle casing. The fastening may be by a bolt *n*⁵ which passes through the lug *n*², through one lug *l*² of the radius rod *l*³ and through the lug *n*³. The flange *n*⁴ on the axle also has a lower lug *n*⁶ for securing the other lug *l*⁴ of the radius rod *l*³, and the adjacent end of a truss or tie-rod *l*⁵ for the rear axle may be secured

here by the nuts l^8 . One of the usual cantilever springs o is shown mounted at one end in upstanding lugs o^1 on a collar o^2 on the axle l and with its middle supported by pivot bolts o^3 . The seat part n^1 of the block n is shaped to conform with and seat upon the flanged end of the axle l at n^4 (see Figure 3) and this, combined with the fastening of the block to the lug n^3 on such flanged end, enables the block to be placed close alongside the collar o^2 so that the load imposed on the blocks n through the springs h is borne as near the ends of the axle as possible.

If desired one of each pair of U-bolts k may be replaced by a short bolt secured by nuts between the clamp plates i^1 and this bolt used with or without the bolt g .

According to the modified construction shown in Figure 4, each wedge block f^3 is formed with longitudinally slotted feet p at its ends for enabling it to be secured by bolts q to the appropriate side member a of the extension; when adjusted and driven into a tightly wedged position between the bottom flanges a^2 and a^3 of the side members of the chassis and extension. The root or thick end of each spring h is clamped between clamp plates i^1 by means of bolts r passed through lugs j on the plates, each upper plate i being stoutly attached to a flange a^2 and the wedge devices by means of the bolt g and the rear bolts q . Or the short bolts r may be replaced by U-bolts secured to the clamp plates and passing over the extension and chassis members a c for securing the springs h to the extension.

The wedge blocks f , f^3 have a groove such as f^2 , Figure 2, in the underside. This gives lightness and also permits the block, as it is slid into position, to clear the head of a rivet (not shown) which may be used to position the upper clamp plate i prior to fitting the spring h .

The wedge devices f , f^3 give a very firm connection between the extension side members and the side members of the chassis and they also enable a very stable attachment of the auxiliary springs to be made. The arrangement also enables the root of the springs h to be anchored relatively far back from the rear cross member d^1 of the frame c , so that the springs h may be long enough to synchronise with the ordinary springs o of the vehicle.

Various modifications of the constructions illustrated are possible without departing from the invention, and mention may be made that instead of the forward ends of the springs h having sliding bearing on the blocks m , these ends may be shaped as eyes and engage a pin mounted in lugs on the blocks similarly to the springs o , the blocks being

mounted revolvably on the axle.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. Conversion attachments for increasing the carrying capacity of motor road vehicles, comprising an extension fitted on the rear end of the chassis and auxiliary springs attached to said extension and having support upon bearings or bearing surfaces fitted to the rear axle of the vehicle, substantially as described.

2. In conversion attachments for increasing the carrying capacity of motor road vehicles, in accordance with claim 1, the provision of wedge devices between the flanges of the tapered chassis longitudinals and the flanges of the side members of the extension substantially as and for the purpose described.

3. Conversion attachments for increasing the carrying capacity of motor road vehicles, in accordance with claim 2, in which the wedge devices are slotted at one or both ends for the passage of a bolt or bolts adapted to prevent longitudinal movement of the wedges substantially as described.

4. In conversion attachments for increasing the carrying capacity of motor road vehicles in accordance with claim 1, the employment of quarter elliptic springs clamped at the root end between clamp plates secured to the extension members, substantially as described.

5. In conversion attachments for increasing the carrying capacity of motor road vehicles in accordance with claims 3 and 4, securing the auxiliary springs and wedge devices in their relative positions longitudinally of the chassis by means of bolts passing through the wedge devices and one or both of the spring clamps and also through the roots of the springs substantially as described.

6. Conversion attachments for increasing the carrying capacity of motor road vehicles in accordance with any one of the preceding claims, in which the auxiliary spring supports or seatings on the rear axle are shaped to conform with and seat upon the flanged ends of the axle casing and are secured to radius-rod lugs on such flanged ends, substantially as and for the purpose described.

7. Conversion attachments for increasing the carrying capacity of motor road vehicles constructed substantially as hereinbefore described with reference to the accompanying drawing.

Dated the 6th day of August, 1929.

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[This Drawing is a reproduction of the Original on a reduced scale.]

